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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/784,952	02/16/2001	Toshinori Ono	29287/117	4195

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EXAMINER

UHLIR, NIKOLAS J

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 12/08/2003

12

Please find below and/or attached an Office communication concerning this application or proceeding.

0512

Office Action Summary

Application No.

09/784,952

Applicant(s)

ONO ET AL.

Examiner

Nikolas J. Uhler

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 3-7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 8-11 is/are rejected.
- 7) ☒ Claim(s) 9-10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other:

DETAILED ACTION

1. This office action is in response to the amendment/request for continued examination (RCE) dated 10/31/03. The applicant's amendment to the instant claims to require a diamond like carbon film that contains more than 20 functional groups containing nitrogen per 100 carbon atoms is sufficient to overcome the prior 35 U.S.C 103(a) rejections of claims 1-2, and 8-11. Accordingly these rejections are hereby withdrawn. However, the case is not in condition for allowance in lieu of the new grounds of rejection presented below. It is noted that claims 1-11 are pending, and claims 3-7 are withdrawn from consideration.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claims 1-2 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yokosawa et al. (US6001479) in view of Ootake et al. (US5958542).
4. Claim 1 requires a magnetic recording medium having a magnetic film on a non-magnetic substrate by intercalating at least an underlayer, wherein the proportion of functional groups containing nitrogen per 100 carbons atoms in a diamond like carbon protective coating mainly composed of carbon for protecting the magnetic film exceeds 20%.
5. Yokosawa et al. teaches a magnetic recording medium comprising a non-magnetic substrate, a non-magnetic underlayer, a magnetic layer (equivalent to applicants claimed magnetic film on a non-magnetic substrate by intercalating at least

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an underlayer), a protective layer, and a lubricating layer (column 3, lines 40-50; column 5, lines 30-50). The protective layer is formed of diamond like carbon (DLC), and the lubricating layer comprises a perfluoropolyether lubricant having a polar terminal group and a hydrocarbon lubricant (column 5, lines 30-67 and column 8, example 2). The functional groups present in the DLC film enable the perfluoropolyether lubricant to be absorbed into the DLC film (column 10, lines 1-13).

6. Yokosawa et al. does not teach a DLC film that has a proportion of functional groups containing N per 100-carbon atoms that is greater than 20%, as required by claims 1.

7. However, Ootake et al. (Ootake) teaches a magnetic recording medium having a substrate, a magnetic layer on the substrate, a protective layer on the magnetic layer, and a lubricant layer on the protective layer (column 3, lines 48-62). The protective layer is composed of diamond like carbon, and is suitably diamond like carbon, diamond like carbon containing hydrogen, or diamond like carbon containing nitrogen (column 3, lines 63-67). Suitably, a DLC film containing from 10-35 atomic % N (equivalent to a DLC film having N containing functional groups) or H is suitable (column 4, lines 10-16). These DLC protective films have many dangling bonds that promote high lubricant absorption (column 4, lines 48-50)

8. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a DLC film containing 35 atomic % N as taught by Ootake as the DLC film utilized by Yokosawa.

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9. One would have been motivated to make this modification in lieu of the teaching in Yokosawa that a DLC film that promotes the absorption of a lubricant is suitable for use as the DLC film, and the fact that Ootake teaches the equivalence of pure DLC, DLC containing N, and DLC containing H as suitable materials for use as a protective film that promotes the absorption of a lubricant.

10. The limitations of claims 2, and 9-10 are met as set forth above for claim 1, as the Yokosawa teaches the use of a perfluoropolyether lubricant as required by claim 2, and claims 9-10 are duplicates of claims 1 and 2.

11. Claims 8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yokosawa as modified by Ootake as applied to claims 2 and 10 above, and further in view of Hosoe et al. (US5759681).

12. Yokosawa as modified by Ootake as set forth above for claims 2 and 10 does not teach an magnetic recording apparatus having the elements recited in claims 8 and 11.

13. However, Hosoe et al. teaches a well known magnetic recording system for a multilayer magnetic medium, wherein the recording system comprises a drive section (equivalent to applicants driving part), a magnetic head having separate read/write sections (equivalent to applicants claimed magnetic head having a recording part and a reproducing part), wherein the reproducing part is magneto resistive, and read/write signal processing means (equivalent to applicants claimed signal processing part for sending and receiving signals to the magnetic head) (column 10, lines 40-65).

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14. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the magnetic recording apparatus taught by Hosoe et al. with the magnetic recording medium taught by Yokosawa as modified by Ootake.

15. One would have been motivated to do so due to the teaching in Hosoe that a magnetic recording apparatus having the required structure of claims 8 and 11 are well known as suitable for use with multilayer magnetic recording media (such as the media taught by Yokosawa as modified by Ootake).

Double Patenting

16. Claims 9 and 10 are objected to under 37 CFR 1.75 as being duplicates of claims 1 and 2 respectfully. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Response to Arguments

17. Applicant's arguments filed 10/31/03 have been fully considered but they are not persuasive. In the instant case, all of the applicants arguments with respect to the previously applied prior art are with respect to the fact that the previously cited prior art failed to teach the specific quantity of N containing functional groups. The new grounds of rejection have addressed this argument above.

Conclusion


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nikolas J. Uhler whose telephone number is 703-305-0179. The examiner can normally be reached on Mon-Fri 7:30 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on 703-308-2367. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-0389.


nju


Paul Thibodeau
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